

SmartTrips Group
1620 North High St. Apt 326
Columbus, Ohio 43201



SMART TRIPS

Marketing Alternative Transportation in the City of Columbus, Ohio

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ANALYSIS REPORTED BY SMART TRIPS GROUP

Rebecca Goffe - Sarah Moore - Alyssa O'Connor - Cameron Roberts - Ryan Thompson

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I. EXECUTIVE SUMMARY

Objective

This report, presented by the Smart Trips Group (STG) research team, aims to assess the feasibility of implementing a Smart Trips program in the City of Columbus. Smart Trips is a marketing program to reduce drive alone trips and increase use of alternative transportation in a city. The research conducted is an effort to satisfy Columbus Green Memo III's Objective C.5: "Reduce the amount of people driving alone to work to 70% over the next five years."

Overview of Components

First, this report will examine baseline data for the City of Columbus's transportation sector to assess current alternative transportation initiatives, greenhouse gas emissions from transportation, and a breakdown of travel methods utilized by city workers. Next is an analysis of two cases studies for Smart Trips programs in the cities of Knoxville, Tennessee and Portland, Oregon. These case studies assist in identifying the costs and benefits associated with the startup and maintenance of a Smart Trips program. Portland is used to conduct a benefits-transfer analysis in order to understand the projected impacts of a Smart Trips program in Columbus. Additionally, various social and economic benefits associated with alternative transportation activities are examined. This report concludes with a list of recommendations for Columbus, and addresses areas of further research for the city to explore prior to implementing its own Smart Trips program.

Recommendations

Four recommendations are developed for the City of Columbus in this report. The first is to organize the program by neighborhood for effective implementation. Secondly, Columbus should partner with local businesses to provide incentives and further promote Columbus's current alternative transportation initiatives. Third, Columbus is encouraged to engage residents through social media and newsletters. The final recommendation is to provide free resources, events and workshops for Smart Trips participants to encourage participation and safety.

Results

Columbus is expected to achieve a small reduction in greenhouse gas emissions through the implementation of a Smart Trips program. However, the program would effectively market Columbus's current alternative transportation programs, and the city could experience a significant reduction in drive alone trips. Residents would also benefit socially and economically from Smart Trips, and this could potentially come at a low cost to the city. Thus, the Smart Trips Group has concluded that Smart Trips would be a cost-effective initiative for improving the city's transportation sector and working toward Green Memo III's Objective C.5.

II. INTRODUCTION

The following report will assess the feasibility of implementing a Smart Trips program in the City of Columbus in order to reduce drive alone trips, increase environmentally friendly trips¹, and reduce overall greenhouse gas emissions from the city's transportation sector. This research is conducted in an effort to satisfy Columbus Green Memo III's Objective C.5: "Reduce the amount of people driving alone to work to 70% over the next five years." This objective is one of many efforts outlined in the city's report to make Columbus a more sustainable and livable community.

In order to determine the effect of implementing a new transportation program in Columbus, it is important to consider the baseline data of the existing transportation sector. In 2013, transportation from the Columbus community emitted roughly 3,100,000 metric tons of greenhouse gas emissions, which accounted for 28.3% of the community's total greenhouse gas emissions, as presented in Figure 1A (City of Columbus, 2015). These emissions resulted from a population of about 820,000 and approximately 390,000 workers in Columbus (U.S. Census Bureau, 2015). A five-year survey by the United States Census Survey from 2009-2013 shows the modes of travel utilized, with workers driving alone accounting for 80.7% of total workers (U.S. Census Bureau, 2015). The results of this survey are shown in Figure 1B. Since that time period, Erin Miller, the City of Columbus's Environmental Steward, provided data that drive alone trips were at 79% in 2013.

In an effort to reduce this number, the City of Columbus currently has a variety of ongoing alternative transportation efforts through organizations such as COTA (Central Ohio Transit Authority), CoGo Bike Share, Yay!Bikes, Clean Fuels Ohio, and the Mid-Ohio Regional

¹ "Environmentally friendly trips" include transportation by walking, biking, busing, telecommuting, car sharing or ridesharing.

Planning Commission (MORPC). While these organizations have improved Columbus' transportation infrastructure, there are still many drivers using high polluting travel options, especially in terms of drive alone trips. One of the main issues Columbus is facing is a low awareness of the alternative transportation options available. This issue could potentially be solved through the introduction of a Smart Trips program.

A Smart Trips program is a marketing tool for promoting alternative forms of transportation, such as walking, biking, carpooling, busing, and even telecommuting (MORPC, 2012). Primary goals under Smart Trips are to reduce drive alone trips, reduce vehicle miles driven, increase awareness and knowledge of all modes of alternative transportation available, increase environmentally friendly trips, and increase the mobility and livability of city neighborhoods. Additionally, Smart Trips serves as a comprehensive umbrella for all other alternative transportation initiatives within a community. This ensures that all of a city's transportation information can be easily accessed through a single source.

Smart Trips operates by supplying residents with information on alternative transportation options. Interested users are then able to sign up for the program, which is at no cost to participants. Participation in the program provides access to information and resources relevant to alternative transportation in the city. Smart Trips programs also provide events and workshops to improve transportation education. The overall goal is to make alternative transportation as easy and available as possible.

Presently, an existing program most similar to Smart Trips in Columbus is facilitated through MORPC called RideSolutions. According to MORPC, RideSolutions is a program that "promotes sustainable transportation alternatives with the goal of reducing congestion in the region, saving commuters on their fuel costs and improving the environment" (MORPC, n.d.).

The program's primary method for achieving this goal has been through the use of carpool and vanpool initiatives that allow members to find preferable commuting partners. While the RideSolutions program has seen moderate success in introducing users to these alternative forms of transportation, the program's scope has only a minor emphasis on education and outreach. These areas of focus could be better explored under a Smart Trips program due to its comprehensive marketing efforts. In order to address these gaps, MORPC has expressed interest in the future implementation of a Smart Trips program in a transportation education toolkit report released in 2012 (MORPC, 2012). Implementation of the program has also been outlined as a goal in the Franklin County Physical Activity Plan (Franklin County Board of Health, n.d.).

Smart Trips has the potential to be more successful due to its mass-marketing style. By marketing to all of the households within a targeted region, the program has the ability to reach out to potential participants who may have never expressed interest in alternative transportation options. The program also utilizes a variety of incentives in order to promote adoption, which will be covered in more detail through the following case study analyses. Altogether, these features make Smart Trips a desirable program to implement in order to improve the efficiency and environmental performance of a city's transportation system.

In order to examine the feasibility of implementing a citywide marketing program for alternative transportation in Columbus, the Smart Trips Group (STG) examined two case studies: Smart Trips Knoxville and SmartTrips Portland. These case studies were selected because both cities have managed a Smart Trips program for at least ten years. Additionally, their management teams have recorded detailed information on program implementation, participation, costs, and benefits for each year. Although STG would have liked to examine Midwestern cities for a more comparable analysis, there are currently no Smart Trips programs in the region. Following an

extensive analysis of these case studies, additional social and economic benefits of alternative transportation use are explored.

III. RESEARCH METHODS

A. Case Study I: Knoxville, TN

The first case study examined is Smart Trips in Knoxville, Tennessee. This program began in 2003 in response to Knoxville's reputation for having one of the worst rates of environmentally friendly trips in the country-- over 85% of commuters here drive alone to work every day and only 0.4% of residents use public transportation to get to work (MetroPulse, 2012). The city's Smart Trips program is designed to address this issue through promoting alternatives to driving alone. This would reduce traffic congestion, improve air quality, and enhance quality of life. In return, participants can improve their health, save money, save the environment and earn rewards by utilizing alternative transportation.

Program Strategy

Knoxville Smart Trips serves 700-900 participants annually, and these participants are encouraged to bike, carpool, bus, walk and telework. The program began in 2003 by targeting only county and state employees, but now has expanded to include all local businesses and residents in Knoxville in order to further improve air quality in the community.

The program primarily draws in participants through their strategic incentive program that includes free community events and monthly gift card drawings. The most well known program is their annual Commuter Challenge. The Commuter Challenge is an eight-week program where participants are entered to win prizes such as iPads, running shoes, restaurant coupons, cash prizes and gift cards to local business. Local businesses that participate in this

event are also eligible to win a donation to their favorite local charity. Overall, this event serves to attract new members and keep existing members motivated to log their trips online.

A resident can become a member by simply signing up online. Then, they can begin logging their environmentally friendly trips online. The software platform used for Knoxville's online logging is Rideshark, which can calculate emission reductions and cost savings for participants. The system also offers a ride-matching database, and provides information for alternative modes of transportation available in Knoxville, TN. For more information on program strategy, please refer to Appendix 1A.

Environmental Benefits

Knoxville Smart Trips began with the ultimate goal of improving local air quality. Between the years 2007 and 2011 Knoxville Smart Trips recorded a reduction in carbon dioxide emissions by 1,211 metric tons. In 2011 Knoxville Smart Trips began recording total greenhouse gas reductions instead of only carbon dioxide emissions. Between 2011 and 2014 Knoxville estimates a reduction of 1,876 metric tons of greenhouse gas emissions as a result of Smart Trips. A percentage reduction in drive alone trips was not recorded; however, there has been a recorded reduction in 3,190,031 vehicle miles traveled (VMT) from 2007 to 2011.

Program Expenses

Knoxville Smart Trips has been funded primarily by federal CMAQ grants (Congestion Mitigation and Air Quality Improvement Program)². When the program began in 2003, it operated on a \$20,000 to \$30,000 budget with one part time employee. Since 2012, Knoxville has hired two full time employees to manage the growing program. The program now has an

² CMAQ grants are a product of the Clean Air Act Amendments in 1990 with the goal of furthering alternative transportation projects in communities across the United States to ultimately improve air quality and reduce congestion.

annual budget of \$200,000 to cover the second employee's salary as well as a growth in the incentive program. This budget also encompasses marketing materials, contests, and Rideshark (Sara Martin, 2015).

Federal funding legislation has recently changed, so Knoxville Smart Trips is now required to have a twenty percent local match to all grants. In response to this legislation change, Knoxville Smart Trips has implemented a sponsor program for their partner businesses. Currently, the program has a fifteen percent local match and expects to gain a one hundred percent match by the end of this fiscal year. In addition to CMAQ grants, Knoxville has received smaller, one-time grants from private foundations such as the Alcoa Foundation, as well as grants from the local Metropolitan Planning Commission.

Program Analysis

Overall, Knoxville Smart Trips is successful in promoting alternative transportation at no cost to the City of Knoxville (due to CMAQ grants and other outside funding sources). However, participation is low with 700-900 participants every year, leaving significant room for improvement in a city with a population of over 100,000.

To improve participation, Knoxville is working to update its online tracking and ride-sharing system with a mobile application. Currently, members must log their trips from a computer. This means members are not logging all environmentally friendly trips due to inconvenience, lack of time or little to no access to a computer. This can result in misrepresentation of total participation among residents, as well as miscalculation of total VMT reduced through the use of Smart Trips. A mobile application could encourage more residents to log their trips, which would provide a clearer picture of resident participation as well as more accurate data collection.

Application to Columbus

Knoxville has a much smaller population size and a different transportation system than Columbus, so its program results cannot perfectly transfer to Columbus. Knoxville has a population of 183,270, about four and a half times smaller than the size of Columbus, Ohio. It is estimated that Columbus would have far more participants than Knoxville's 700-900 per year. Due to this substantial disparity between population sizes, Knoxville's data was not used to directly estimate the potential costs and environmental benefits of a Smart Trips program in Columbus. This case study was useful, however, in providing a detailed analysis of specific marketing techniques that proved successful in a city formerly known for its poor participation in alternative transportation. Columbus could learn from Knoxville's community events, gift card incentive program and online tracking system. Similar to Knoxville, Columbus could partner with local businesses and organizations to further promote environmentally friendly travel. These potential partner opportunities include COTA, Car2Go, Yay!Bikes and CoGo Bike Share.

Finally, Sara Martin, Outreach Coordinator for Knoxville Smart Trips, provided great advice for Columbus if the city chooses to implement its own Smart Trips program:

The main thing that comes to mind is the challenge of marketing. These programs are new and unique, so people don't quickly or easily understand why they exist or how they work. The result is that marketing takes a lot of manpower and it's easy for staff to become overwhelmed. I would advise you to create a plan where you identify any existing programs or groups that operate in similar veins (sustainability, health, HR benefits, clean fuels, etc.) and look for opportunities for them to promote the new program to their existing audiences. Anything you can do to leverage the message to more people with minimal effort will help....Another more technical tip is to be sure you partner with a software developer that has an app. Ours (Rideshark) hasn't developed one yet and that's hurting us. People ask all the time and we have to say, 'No, sorry, you'll have to do it through our website.'

B. Case Study II: Portland, Oregon

The second case study examined is from SmartTrips Portland. This is the largest Smart Trips program in the United States to date, having targeted more than 609,000 Portlanders (or over 250,000 households) from its beginning in 2005. With comparable population sizes as well as demographics, the City of Columbus can learn a great deal from Portland's program. This includes the marketing strategies of the program, program organization, costs and benefits associated with Smart Trips, and the potential success of Smart Trips in a mid-sized city.

Program Strategy

SmartTrips Portland is managed by the City of Portland's Active Transportation team within the Bureau of Transportation. The team's overarching goal is "to make sure everyone who lives, works or runs a business in Portland knows about all the options they have for getting around... in order to increase fitness, save money, reduce traffic congestion, and help maintain a livable environment" (SmartTrips Portland, 2015). Portland has a variety of modes of alternative transportation available to residents including walking, biking, and car sharing, as well as transit options such as riding the city's buses, streetcars, light rail, and aerial tram. The Active Transportation team is able to market these modes of alternative transportation to all local citizens and businesses, new and old, through its three programs—SmartTrips by neighborhood, SmartTrips Welcome, and SmartTrips Business.

SmartTrips by neighborhood was the first program developed in order to market modes of alternative transportation to Portland's residents. In every year from 2005 to 2010, the Active Transportation team targeted a different neighborhood in Portland³. With this program design, one neighborhood of 6,000 to 33,000 households would be targeted per year over the program

³ Portland's neighborhood programs are SmartTrips Eastside (2005), Northeast (2006), Southeast (2007), Southwest (2008), North Northwest (2009), and Green Line (2010). TravelSmart Pilot Southwest (2003), Interstate TravelSmart (2004) preceded the introduction of SmartTrips Portland

lifetime of six years. Figure 2A depicts Portland's neighborhoods and represents the boundaries of Portland's neighborhood associations and district coalitions. A focus on one neighborhood per year allows for more effective marketing, according to Linda Ginenthal, Program Manager of SmartTrips Portland (Ginenthal, 2015). Fewer staff members are required in this strategy; only 5 full time equivalent (FTE) staff members were needed on average throughout the program. In contrast, targeting all of Portland's neighborhoods at once would be inefficient as there would be a need for many short-term employees. With focusing on one neighborhood per year, the SmartTrips Portland staff could continue developing and amending the program as needed to better suit the needs and desires of residents. Residents also benefit by receiving more individualized attention.

Portland's second program, SmartTrips Welcome, was developed as the neighborhood program came to a close in 2010. SmartTrips Welcome is essentially an upkeep program. It is designed with Portland's newest residents in mind by introducing them to all transportation options within the city. This is an especially effective tool in Portland, where the population grew by over 4% from 2010 to 2013.

SmartTrips Welcome and the neighborhood program operate similarly in terms of marketing behaviors. The Active Transportation team initially delivers a residential order form to the intended recipient (either residents in the targeted neighborhood, or new residents) to make initial contact and introduce the program. (See Figure 2B for an example of an excerpt from the residential order form.) Residents are then encouraged to order more program-specific materials for events and modes of transportation in which they are most interested, such as Portland By Cycle "Guide to Your Ride", Carpool Match, or bus route maps. All residents in the targeted area are contacted at least five times throughout the year, whereas interested residents are

contacted at least ten times per year (Oregon Metro, 2012). Portland SmartTrips utilizes free materials, events, and workshops to market alternative transportation to residents. The materials requested by residents are typically hand-delivered on foot or bike by the Active Transportation employees or volunteers. While this was the most environmentally friendly and effective method of delivery in the neighborhood program, “it has made for some long trips to deliver materials to new residents who may be popping up all over the city!” according to Ginenthal. While the neighborhood program ended in 2010, all residents are encouraged to participate in any current SmartTrips Welcome events in which they may be interested. Previous participants in the neighborhood program continue to receive email and newsletter updates from the Active Transportation team.

Portland’s final program, SmartTrips Business, operates in a different manner than the previous two. Rather than focusing on all residents, SmartTrips Business encourages local employers, commuters, and customers to walk and bike. The program offers resources to businesses such as free installation of bike racks, neighborhood biking and walking maps for customers, and customized workshops for employees. In addition, SmartTrips coupons were distributed to residents in order to incentivize participation in SmartTrips, as well as to acknowledge local businesses, attract more consumers, and generally benefit the Portland economy.

Environmental Benefits

A large draw to alternative transportation is the reduced impact of greenhouse gas emissions on the environment. Through the neighborhood and business programs, SmartTrips Portland has successfully reduced drive alone trips by 10.9% per year (shown in Figure 2D) and has reduced an average of 12,789 metric tons of greenhouse gas (carbon dioxide and nitrogen

oxide) emissions annually. These results are with 8,000-9,000 participating households, or about 25% of the targeted households each year⁴. For more information on neighborhood program results, please refer to Appendix 2A on the Green Line program.

The SmartTrips Welcome pilot program in 2012 had a 10.4% reduction in drive alone trips among new residents, as well as a 13.6% relative increase in environmentally friendly trips. An estimated 10.5% (of the city's 5,400 targeted new residents) ordered materials and participated in the program. This led to VMT reduced by 1,076,118 miles, or a reduction of about 200 miles per new resident per year.

Program Expenses

SmartTrips Portland varies in cost every year based on the type of program (neighborhood or Welcome), number of participants, and specific events offered. Portland's neighborhood programs cost an average of \$645,358 per year. This cost includes staff, maps, bicycle safety kits, campaigns, newsletters, specialty programs, and business partnerships. Smaller neighborhood programs like the 2008 Southwest program costs \$589,000, while the largest program, the 2010 Green Line, had a budget of \$721,916. An example of specific program expenses are illustrated in the chart for Green Line in Figure 2F. Neighborhood programs are estimated to cost \$10-12 per targeted resident per year. The Welcome SmartTrips pilot in 2012 had a smaller budget of \$78,000 because it targeted fewer residents (5,600 residents in 2012). Funding for SmartTrips Portland is provided by a multitude of local, state and federal grants as well as private sponsorships. For more information on funding, please refer to Appendix 2B.

⁴These results derive from the findings of Davis Hibbits Midghall, a data collection firm. The firm evaluated the progress of each neighborhood program through panel-style pre- and post- program phone surveys that asked qualitative and quantitative questions to determine the impact of SmartTrips Portland on changing transportation behaviors as well as attitudes on alternative transportation.

Program Analysis

Overall, SmartTrips Portland is successful in marketing modes of alternative transportation to Portlanders. Though the program expenses are over half a million dollars every year, there has been a significant increase in environmentally friendly trips in the city, a reduction in drive alone trips and, in effect, a reduction in greenhouse gas emissions from the transportation sector. Portland has had moderate to high participation rates from targeted households (about 25%), and the program has succeeded in involving residents of different ages, genders, and backgrounds (SmartTrips Portland, 2012). SmartTrips Portland obtains grants from a wide variety of funding sources due to its strong reputation as having one of the best alternative transportation networks in the United States. Thus, the program comes at a small cost to the city while achieving high participation rates and significant environmental improvements.

Application to Columbus (Benefits-Transfer Analysis)

SmartTrips Portland is a useful case study for Columbus due to the cities' similar population sizes. Due to this similarity, Portland's program results are used to estimate the potential impact of a Smart Trips program in Columbus. The cost and greenhouse gas emissions reduction data from Portland is evaluated using a benefits-transfer analysis scaled up by 1.35 to account for Columbus's slightly larger population. Therefore, the average annual cost of Portland's neighborhood program (\$647,358.67) is multiplied by 1.35 to determine potential costs for Columbus (\$871,009.08). Similarly, the pounds of carbon dioxide and nitrogen oxide greenhouse gas emissions reduced from Portland's program every year are translated into metric tons (the units more commonly used in Columbus's evaluation of greenhouse gas emissions), and then scaled up by 1.35 to result in an estimated 17,260.04 metric tons annual reduction in greenhouse gas emissions. Finally, this estimated reduction in greenhouse gases is divided by

Columbus's current emissions from the transportation sector. This determines the potential percentage reduction in greenhouse gas emissions from the transportation sector per year as a result of a Smart Trips program. This percentage is estimated at 0.55% reduction in greenhouse gas emissions from Columbus's transportation sector. Although this percentage is low, Portland did reduce drive alone trips by 10.9% on average every year. If Columbus had similar participation rates to Portland and achieved over 10% reduction in drive alone trips, this would satisfy Green Memo III's objective of reducing drive alone trips in Columbus to 70%.

While this benefits-transfer analysis was the most appropriate method for evaluating potential costs and environmental benefits of a Smart Trips program in Columbus, there are stark differences between Columbus and Portland that must be taken into account when comparing the two cities. As mentioned, Portland has long been respected for its well-organized transportation sector. Portlanders have access to modes of alternative transportation that are not available to Columbus's residents such as streetcars, a light rail and aerial tram. Portland also has the infrastructure necessary to support greater use of alternative transportation such as more bike paths, bus lanes, and sidewalks. Columbus does not currently have this level of transportation infrastructure, and thus the city may need to improve alternative transportation infrastructure in order to market Smart Trips more effectively. Finally, Portland's success may be attributed to the mindset and behaviors of its citizens. Its population, in general, is more environmentally conscious than the national average, which may contribute to high participation rates. Thus, this estimate of greenhouse gas emission reduction may be a generous assumption of what Columbus can achieve.

C. Additional Social and Economic Benefits of Smart Trips

Next, social and economic benefits of Smart Trips to residents and the general community are examined in order to gain a more complete picture of the impact of Smart Trips in a city. This includes benefits such as reduced healthcare expenses, fewer automobile maintenance costs, an increase in job satisfaction, and a greater focus on the local community.

Reduced traffic congestion and fewer traffic accidents are one benefit of increased use of alternative transportation. The occurrence of bus-related accident fatalities is 1/20 the rate of those that occur in other vehicles such as cars (Portland SmartTrips, 2012). In addition to a lower rate of accidents, health benefits that can result from participating in public transportation on a regular basis are shown through reduced levels of stress. Passenger status instead of driver status allows for alternate uses of time that can include leisure activities (reading, music, socializing) or work-related projects, which can add to productivity and reduce stress caused by feeling behind at work. The average American spends 53 minutes of each day during mass transit commutes, which adds up to over 440 hours of time annually that can be used towards other productive activities (Portland SmartTrips, 2012).

One of the most important economic benefits is the potential healthcare savings resulting from the implementation of a Smart Trips program. According to data from Portland's website, the yearly average health cost savings for a physically active person, such as someone who walks or bikes to work, are between \$305 and \$907 (Portland SmartTrips, 2012). Physically active people are less likely to be overweight. Participants may also improve blood pressure, which could result in healthcare cost savings and a general improvement in quality of life. In addition to encouraging physical activity, Smart Trips improves air quality with its reduction in greenhouse gas emissions and particulate matter. Using emissions data from Portland's program, the health

cost savings due to the reduction of carbon dioxide and nitrogen oxide in Columbus could potentially be as high as \$1,007,984 per year.

People who bike or walk around town as their primary method of transportation are better able to experience what the city has to offer and are more likely to form a personal connection with their area. This means there is a greater chance that they will notice a local business or restaurant and are more likely to stop and check it out as opposed to someone who is driving (Snyder, 2012). Most bikers or walkers will stay in their local area and help form a stronger connection with the community, especially if others are out walking and biking.

Another major benefit to Smart Trips is the reduction in fuel and maintenance costs due to less dependence on personal automobiles. Riding the bus, carpooling, or even biking around town can reduce an individual's need to pay for gas and car maintenance. Based on studies from Knoxville's Smart Trips program, the total estimated fuel and maintenance savings scaled up to a city the size of Columbus could potentially be as large as \$377,017.36 for the city per year. This money saved can be used at local businesses to stimulate the economy.

A final soft benefit of Smart Trips is increased job satisfaction and productivity of those who make use of alternative transportation. Not only does exercise like walking and biking improve physical health, but it also helps improve mental focus and reduces stress. Better physical and mental health can lead to a decrease in sick time of up to 50% and often results in a higher job satisfaction (SmartTrips Portland, 2015). Businesses that offer additional benefits such as bus passes, carpool options, and bike racks/bike storage are better able to attract and retain desirable employees. This is important since some positions can cost as much as 150% of an employee's annual salary to find and train a replacement (SmartTrips Portland, 2015). These

additional social and economic benefits of increased use of alternative transportation are important factors in determining the value of a Smart Trips program.

IV. RECOMMENDATIONS FOR COLUMBUS

Through this analysis, four recommendations were developed for the City of Columbus to consider prior to implementing a Smart Trips program.

1. Organize Program by Neighborhood

First, the City of Columbus is encouraged to organize its Smart Trips program into ten neighborhoods of 32,600 households each on average. Smart Trips could target one neighborhood each year over the course of ten years. This would strategically market alternative transportation to all of Columbus's nearly 326,000 households. Neighborhood divisions could derive from Columbus's Area Commissions. These area commissions have been developed in part by the Planning Division within the City of Columbus's Department of Development, and allow for an organized classification of the City's households. Columbus's Southside Commission, for instance, has 32,251 households-- nearly the exact number that Smart Trips Columbus would need to target per year as recommended by STG. Several smaller, neighboring area commissions could be combined to equal a similar number of households for a one-year implementation. See Figure 3A for a map of Columbus's current area commission boundaries. After each neighborhood is targeted, Columbus could adopt a Welcome program that focuses on marketing alternative transportation options to new residents, as seen in Portland's program.

The organization of Smart Trips by area commission is not only effective for marketing to residents, but also allows for each area commission to determine the most effective implementation for its own residents. The University District, for example, has a large student population that might respond to certain events and incentives differently than other Columbus

neighborhoods. The Smart Trips program operating throughout The Ohio State University campus could potentially run with the help of a student-organized, volunteer-driven club. An ongoing club would address the issue of rapid turnover of residents in the area, and students could be a driving force behind the implementation and maintenance of Smart Trips both on The Ohio State University's campus and in the general Columbus area. Students could volunteer their time to deliver Smart Trips marketing materials to the targeted area commissions on bike or by foot, and their club activities could assist in spreading the word to more students and residents. Thus, the large student population in the University District area commission could prove to be a unique advantage for Columbus.

2. Partner with Local Businesses

The second recommendation is for Smart Trips to partner with local businesses in order to create incentives for participants while promoting local economic activity. For example, local businesses could offer discounts to participants (such as a reduced price for a cup of coffee) since individuals who use alternative modes of transportation, such as walking or biking, are more likely to stop and visit these locations.

Additionally, Smart Trips should look into forming strategic partnerships with other promoters of alternative transportation in the city, including car2go, Yay!Bikes, COTA Bus, COGO Bike Share, and Clean Fuels Ohio. These partnerships would help minimize overlap between initiatives set forth by these organizations, while creating the comprehensive umbrella that makes a Smart Trips program an effective database for accessible resources.

3. Promote to Local Citizens

The third recommendation for the City of Columbus is to market Smart Trips through social media, contact members through monthly newsletters, and perform outreach at special

events. Social media would be effective in gaining new membership in the program, and this has been successful in both Knoxville and Portland. There are many Facebook pages currently promoting the use of alternative transportation in Columbus, and these could be used to reach new members. As mentioned, Columbus's large student population is an asset, and student-driven clubs could assist in spreading the word for Smart Trips through social media and at community events. Finally, Smart Trips could operate booths at Columbus's many festivals and community events to market Smart Trips, similar to the outreach booths of Car2Go, YayBikes!, and Pedal Instead. A combination of these marketing strategies would provide an effective outreach approach for a relatively low cost.

4. Provide Free Resources

Finally, Columbus could provide free informational resources, events and workshops in order to encourage participation. A Smart Trips website could serve as the one go-to source for all available transportation modes in Columbus. This comprehensive website could serve residents and visitors who are looking into transportation options in the city. Furthermore, free workshops that encourage biking and pedestrian safety could promote participation in Columbus's existing modes of alternative transportation. A common obstacle preventing interest in alternative forms of travel is the assumption that there are not any worthwhile options that would be good alternatives for individuals and their daily routines. Brochures that illustrate the available bike paths for work and school commutes can encourage residents to transform their daily modes of transportation. Similarly to Portland and Knoxville, Smart Trips could install free bike racks on worksites of Columbus businesses that have expressed interest in promoting alternative transportation.

V. AREAS OF FURTHER RESEARCH

Due to time and research limitations, the Smart Trips Group did not have the opportunity to cover all essential details of implementing a Smart Trips program in Columbus. First, STG did not thoroughly explore all available grant options and identify potential sources of funding. As witnessed in the Knoxville and Portland case studies, the program could come at a small cost to the city if expenses are offset by local, state, or federal grants. Organizations and agencies around Ohio and Columbus, such as MORPC or ODOT, could potentially cover partial or full costs of the program. MORPC has expressed interest in a Smart Trips program in its “Education and Encouragement for Pedestrians” toolkit. Furthermore, MORPC receives federal CMAQ grants, and this funding could possibly be used towards the creation of a Smart Trips program. This opportunity should be researched further by the City of Columbus.

In addition to possible funding opportunities, the City of Columbus could explore the option of creating a mobile application in which participants can log their environmentally friendly trips from their mobile devices. This is a more effective alternative to Knoxville’s online logging system, and was recommended by Knoxville Smart Trips’ Outreach Coordinator. Due to the limited time and resource availability, specific details regarding the cost, creation and implementation of the mobile application were not covered in this report. Further, the city could review case studies from other cities beyond Knoxville and Portland that have implemented Smart Trips. Potential cities include Salt Lake City, Utah; St. Paul, Minnesota; and Whatcom County, Washington. This could result in a more complete analysis of all currently operating programs, and may better envision how Smart Trips could operate in Columbus.

Finally, the City should discuss Smart Trips with local businesses in order to gauge which companies would be willing to provide incentives to participants. These program details,

though largely outside the scope of this report, are important to create a more effective program in Columbus.

VI. CONCLUSION

In conclusion, Smart Trips could strategically market alternative transportation in Columbus. While its direct impact on GHG emission reduction is small, Smart Trips is essential for encouraging other walking, biking, and busing initiatives in Green Memo III. It would encourage use of Columbus's current public transportation services, and may contribute to a reduction in drive alone trips to below 70% as targeted in Green Memo III. In effect, the city would reduce greenhouse gas emissions from the transportation sector.

Through examining Smart Trips in Knoxville and Portland, Columbus can envision the techniques, organization, benefits and costs of its own program. While neither case study perfectly applies to Columbus, each city contributed to a greater understanding of the program. Knoxville was a great source of information on marketing techniques that effectively engage a population unfamiliar with alternative transportation. Portland, on the other hand, has the culture and infrastructure to support environmentally friendly travel, though has a population size and neighborhood divisions more similar to Columbus. By examining each city's approach, Columbus can create a program suited for its own infrastructure and population as explored by the Smart Trips Group recommendations. If the city implements Smart Trips, Columbus could set the standard and become a leading example as the first major Midwestern city with a Smart Trips program.

VII. ADDITIONAL INFORMATION

Figure 1A. Columbus's Community Wide Total GHG Emissions in 2013 (City of Columbus, 2015).

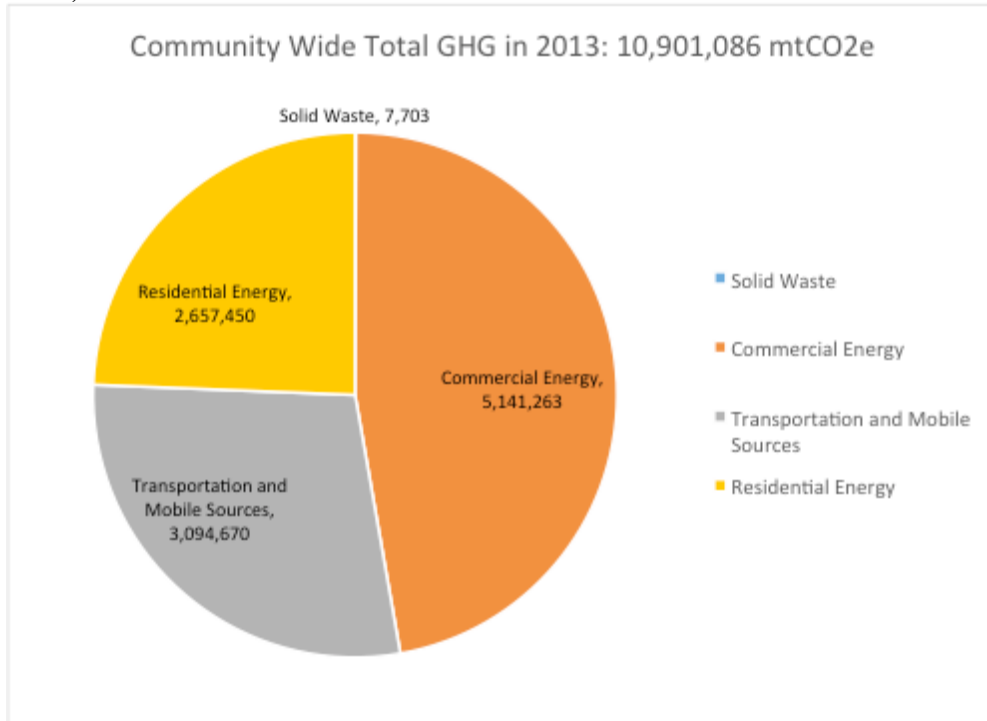


Figure 1B. Columbus Worker's Means of Transportation in 2013 (U.S. Census Bureau, 2015).

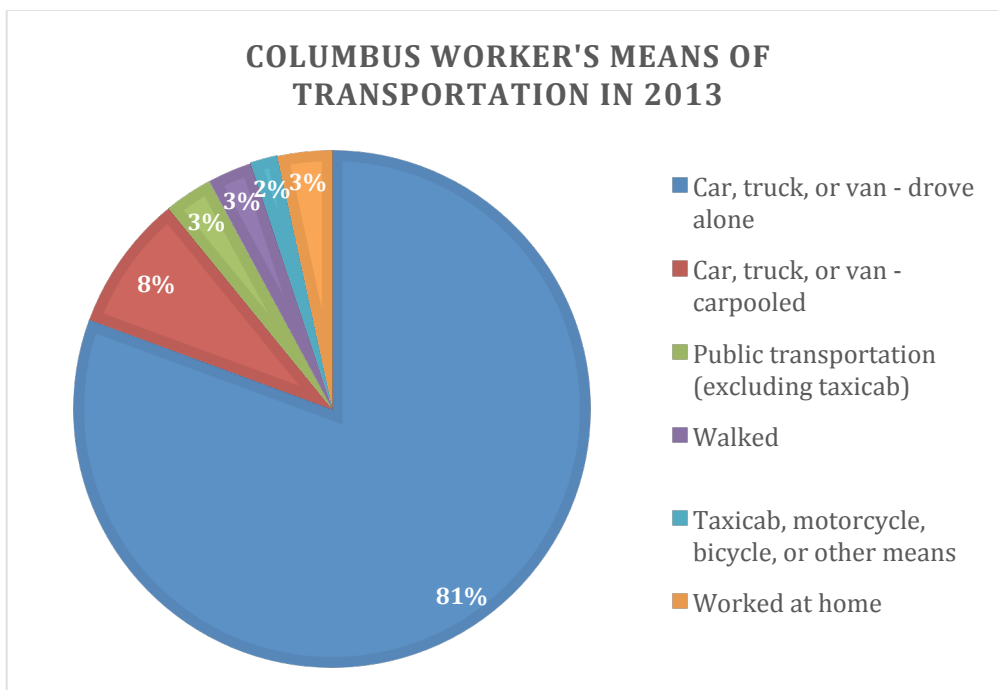


Figure 2A: SmartTrips Portland is organized by neighborhood associations, as seen in this map of neighborhood boundaries (SmartTrips Portland, 2015).

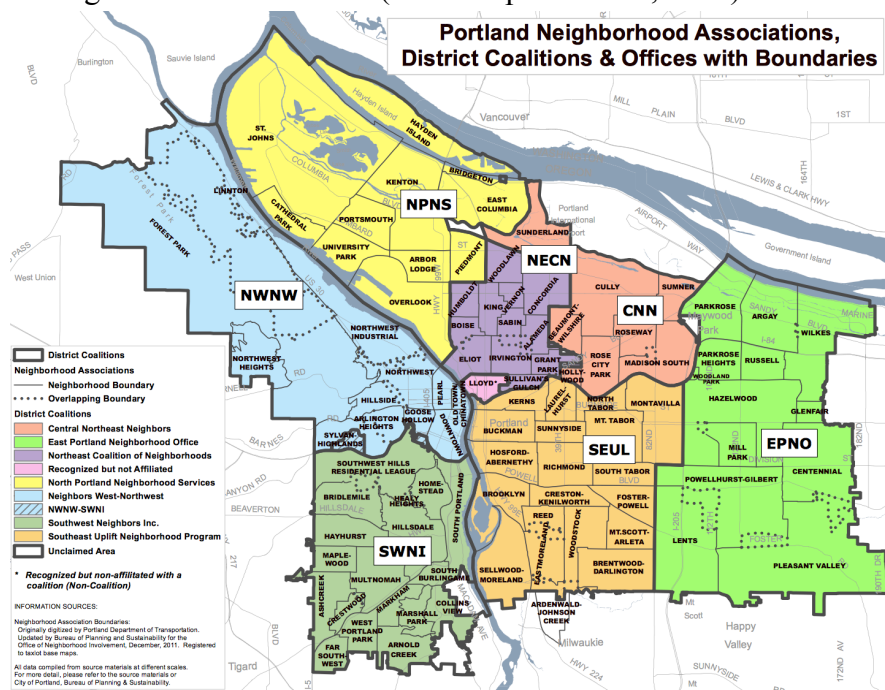


Figure 2B. An excerpt from a Residential Order Form that SmartTrips Portland uses to initially contact residents, introduce them to the program, and gauge a household's interest in specific events and modes of transportation (SmartTrips Portland, 2015).

2. Walking

Please ☒ check as many boxes as you want

Ten Toe Express Walking Kit A free digital pedometer and other incentives to walk for short trips and improve your health too! Includes:

- Pedometer – Count your steps!
- Walking Logs – Keep track of your progress
- Northeast or Southeast Portland Walking / Biking Map
- Ten Toe Express Guided Walks Schedule
- Short Tripper – Coupon book to walk to local businesses and save money
- Walk to Wellness – Check out these great programs, classes, and information sources

Northeast Portland or Southeast Portland Walking/Biking Map A detailed local area map of walking, bus, MAX, and bike routes.

Ten Toe Express Guided Walks Schedule Get exercise and meet your neighbors on these great walks.

Walk to Wellness Check out these helpful programs, classes, and information sources.

Oregon Crosswalk Laws Everyone is a pedestrian at some point each day. Learn how to be prepared.

Senior Strolls Schedule Designed to be easy and fun, these Wednesday morning walks bring seniors together to explore neighborhood points

Figure 2C. Chart detailing results from SmartTrips Portland,'s neighborhood programs from 2005-2010, as well as the pilot Welcome SmartTrips program in 2012.

	2005 Eastside	2006 Northeast Hub	2007 Southeast	2008 Southwest	2009 North- Northwest	2010 Greenline	Welcome SmartTrips Pilot
Number of Households Targeted	20,656		23,400	21,500	28,500	33,000	-
Number of Households Participating	7,200	7,400	7,000	6,000	7,500	8,200	
Reduction in Total Drive Alone Trips (%)	8.6	12.8	9.4	9	9.3	18.4	10.4
Total Cost of Program(\$)	-	-	-	\$589,000	\$625,160	\$721,916	\$78,000
Overhead Staff Required	-	4.35-	-	4.1	4.5	6	-
Total Annual Vehicle Miles Reduced	-	-	-	-	-	39,284,167	1,076,118
Percent increase in Environmentally friendly Trips	46.70%	-	-	-	10.50%	30.40%	13.60%

Figure 2D. Percent annual reductions in drive alone trips per year by neighborhood program in SmartTrips Portland.

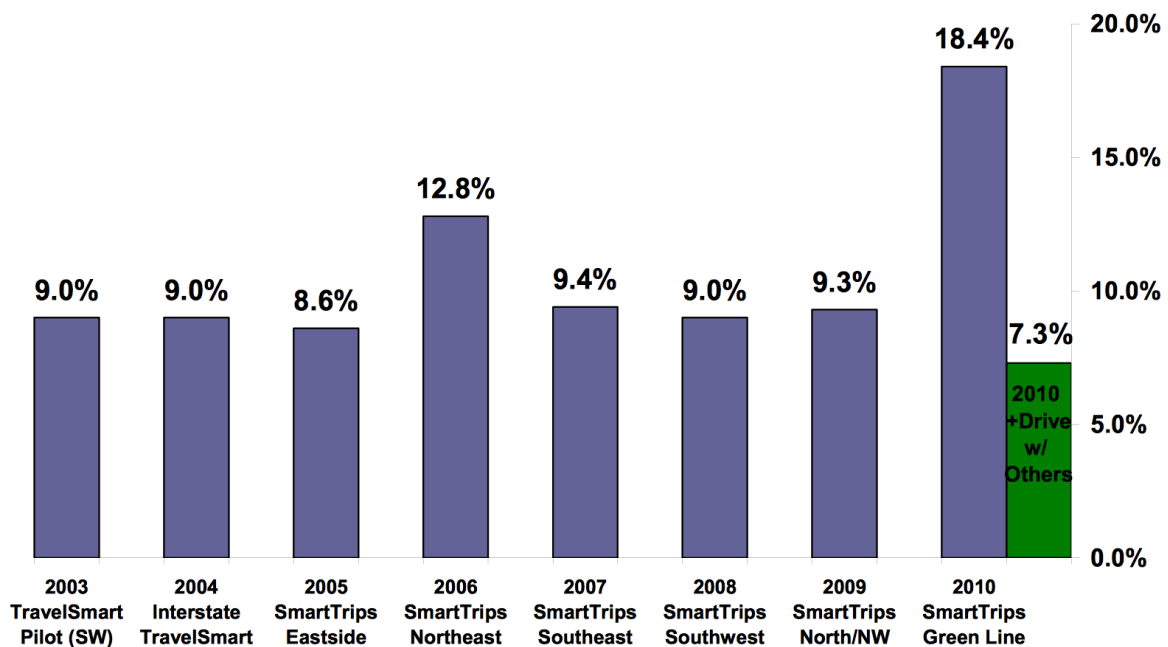
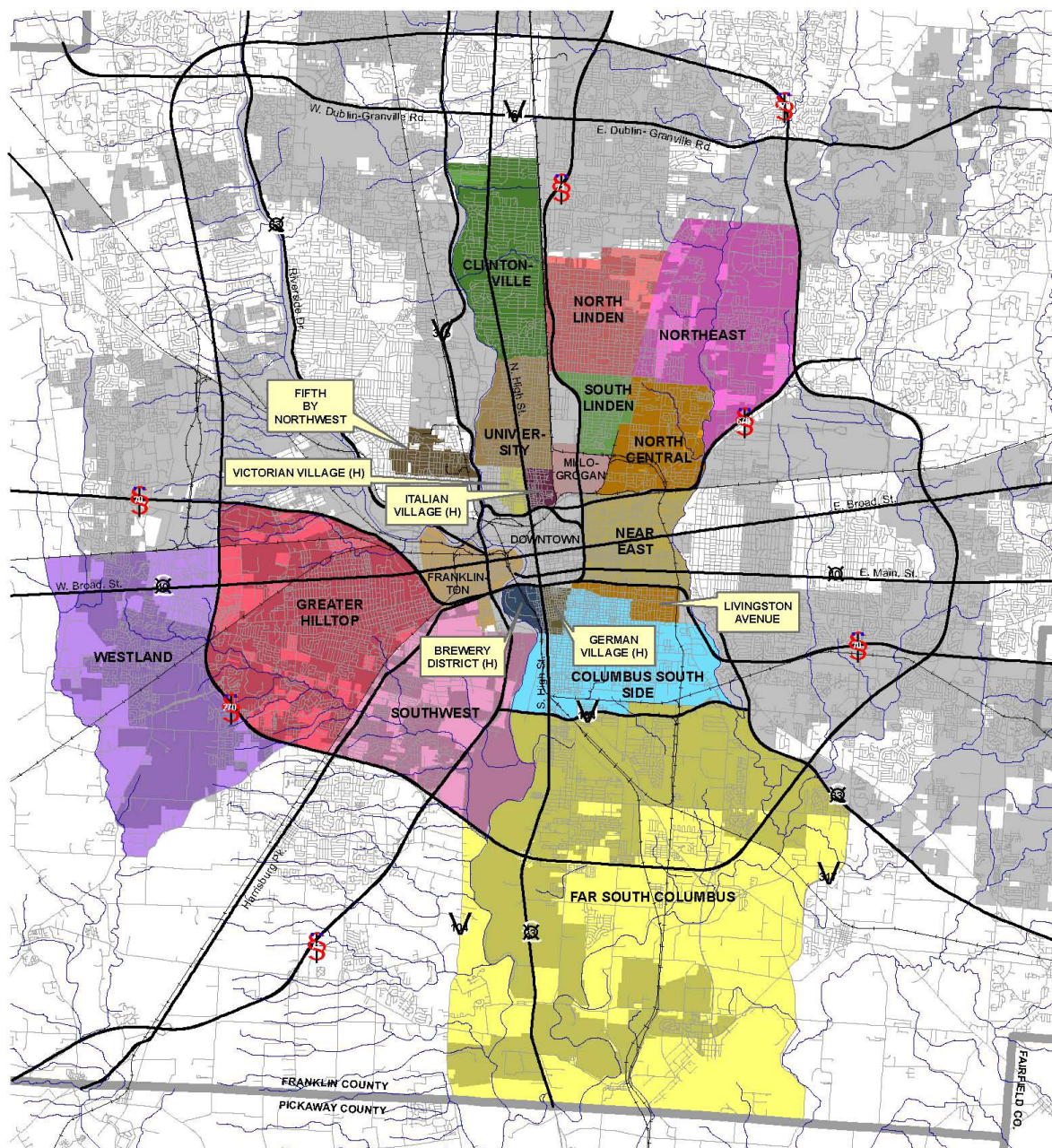


Figure 2F. Cost listing of SmartTrips Green Line neighborhood program in 2010. According to SmartTrips Portland, “the program costs amount to \$10 per person in the SmartTrips area. This 33,000 household or 79,200 resident and 3,500 businesses cost \$721,916. This includes 5.8 FT staff and most materials and services. Not included are computer and general overhead (staff benefits are included) plus printing of some bicycle maps and transit schedules.”

Program Categories	Actuals	
SmartTrips Options Materials	\$56,270	
Southeast Walk/Bike Map	\$12,200	Kaiser Permanente sponsorship
Professional Surveys	\$35,000	
Ten Toe Express Walking Campaign	\$24,260	Kaiser Permanente sponsorship
Portland By Cycle Kit Rides and Workshops	\$29,270	
Women on Bikes	\$3,500	
SmartTrips Green Line Newsletter	\$30,900	
Senior Strolls	\$2,150	
SmartTrips Business	\$19,250	
Miscellaneous	\$470	
Totals	\$213,270	

Figure 3A. Recommended organization of Smart Trips in Columbus by defined Area Commissions



Appendix

1A. Knoxville Program Details

Community events include events such as local employer competitions, bike month, and free luncheons. Knoxville Smart Trips offers a “school pool”; this program helps connect parents to other parents that need help getting their kids to and from school. Other programs worth noting are the emergency ride home program and a parking pass program. The emergency ride home program means that any member can receive a free taxi ride up to six times per year. These taxi rides are used as a safety net for members in case a carpool does not work out, they are running late to an event or any other issue that may come up. The parking pass program provides commuters with five free parking passes for downtown parking garages for the special occasions commuters may need their vehicle.

2A. A Portland Success Story: Green Line neighborhood

The SmartTrips Green Line neighborhood program, the final neighborhood program implemented in 2010, had the best-recorded results of all. It targeted 33,000 households and 3,500 businesses, and reduced over 48 million VMT in one year. According to SmartTrips Portland, “this is equivalent to shifting over two trips per week, per person in the target area from driving alone to another more environmentally friendly mode of transportation such as walking, bicycling, carpooling or transit” (SmartTrips Portland, 2010). Green Line reduced drive alone trips by 18.4%, far more than any other previous neighborhood program, and increased environmentally friendly modes of transportation by 30.4%. Other environmentally beneficial trends emerged from the Green Line program such as an increase in transit use by nearly 15%, a doubling of carpooling rates, and an increase in bicycle counts by 9.5% in east Portland throughout 2010. This program is believed to be the most successful neighborhood program because it built upon already existing partnerships and programs from previous years, such as the partnership with TriMet, the bus, light rail and commuter rail transit services in the city.

2B. Details on Funding for Portland SmartTrips

Kaiser Permanente, a nonprofit healthcare provider, has been one of the primary funders of SmartTrips neighborhood programs by sponsoring walk events, printing walking maps, and providing residents with free pedometers. TriMet, owner of Portland’s major bus system and light rail, provided Transit tracker cards to the 2010 Green Line program; these cards enable participants to know when the next closest bus will arrive at their nearby bus stops, and resulted in an increase in bus riders. Zipcar provided discounts to Portlanders with a SmartTrips card, which encouraged car sharing. Three of Portland’s neighborhood programs have received grants from Metro’s Regional Transportation Options-- \$6,040 to Northeast, \$200,000 to Northwest, and \$300,000 to Green Line. This significant spike in funding for the 2010 Green Line program may have contributed to its success above other neighborhood programs. Additional assistance has resulted from Business Energy Tax Credits from the U.S. federal government’s Internal Revenue Service.

SmartTrips Welcome 2012 pilot expenses were also covered in part by the Business Energy Tax Credits. It received general transportation revenues from Portland's gas taxes, parking fees, permits and fines. SmartTrips Welcome was partially funded by the CMAQ (Congestion, Mitigation and Air Quality) Improvement Program as was discussed in detail in Knoxville's case study.

VIII. RESOURCES

List of Primary Contacts

Erin Miller

Environmental Steward, City of Columbus

Email: emmiller@columbus.gov

Sara Martin

Outreach Coordinator, Knoxville Smart Trips

Email: sara.martin@knoxtrans.org

Phone: 865- 215-3234

Linda Ginenthal

Program Manager, SmartTrips Portland.

Email: Linda.Ginenthal@portlandoregon.gov

Phone: 503-823-5266

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